

SIGNIFICANT FIGURES

(P1) (3 MARKS)

1 — 9 ✓

0 ??

Decimal places:

1.3461 (4dp)

0.21 (2dp)

0.3 (1dp)

12 cm (tape)

12.0 cm (rule)

12.00 cm (vernier cal)

12.000 cm (micrometer)

✓✓✓✓✓
12345 (5sf)

✓✓✓✓✓
45.6789 (6sf)

RULE 1:

✓✓xxx
12000. (2sf)

xxx✓✓✓
0.000513

START MOVING FROM DECIMAL
TOWARDS THE NUMBERS.

UNTIL YOU REACH A NUMBER
(tick)
NO ZERO IS SIGNIFICANT.

ONLY USE RULE 1 ON THE
NUMBERS WHICH ARE
ONE-SIDED.

MEANING WHOLE NO IS ON
ONE SIDE OF DECIMAL.

eg 123000
0.000123

RULE 2:

TRAPPED ZERO
IS SIGNIFICANT

Trapped Zero is trapped between two tick (sf)

✓✓✓
102 (3sf)
T

✓✓✓xxx
1204000. (4sf)
T

✓✓✓✓✓
13050.09 (7sf)
T T T

RULE 3:

AN UNNECESSARY
ZERO IS SIGNIFICANT

UNNECESSARY ZERO:
1) After the decimal
2) Extreme Right side

✓✓✓
12.0 (3sf)
un

x xxx✓✓✓✓
0.0005600 (4sf)
un

✓✓✓✓✓✓
120300.0 (7sf)
T Trap un

HOW TO CONVERT TO GIVEN SIGNIFICANT FIGURES:-

Q: Convert these to 2 significant figures:

(a) $12345 \xrightarrow{\text{round off}} 12000 \xrightarrow[\text{REMOVE ONLY UNNECESSARY ZERO.}]{\text{Remove ONLY}} 12000$
Keep check for +1

(b) $356.714 \xrightarrow{\text{round off}} 360.000 \xrightarrow[\text{REMOVE ONLY UNNECESSARY ZERO.}]{\text{Remove ONLY}} 360. \text{ (2sf)}$
Keep +1

(c) $0.00579621 \xrightarrow{\text{round off}} 0.00580000 \xrightarrow[\text{REMOVE ONLY UNNECESSARY ZERO.}]{\text{Remove ONLY}} 0.0058$
+1

(d) $12340.08 \xrightarrow{\text{round off}} 12000.00 \xrightarrow[\text{REMOVE ONLY UNNECESSARY ZERO.}]{\text{Remove ONLY}} 12000$
+0

(e) $7.98 \xrightarrow{\text{round off}} 8.00 \xrightarrow{\text{Remove ONLY UNNECESSARY ZERO.}} 8.0$
+1

ESTIMATION Goal is to estimate in such a way that your calculations become simple to solve without a calculator.

P1

TYPE 1

Round off to nearest whole number, ten or hundred.

$9.8 \longrightarrow 10$

$168 \longrightarrow 170$

$385 \longrightarrow 400$

TYPE 2

a) $\frac{29}{4} \approx \frac{28}{4} \approx 7$

In case of

division try

to get to

closest multiple

b) $\frac{24}{\pi} = \frac{24}{3} = 8$

3.1415...

3 4

TYPE 3 a) $\sqrt{11} \approx \sqrt{9} = 3$

Jump to the

closest square (b) $\sqrt{50} \approx \sqrt{49} = 7$

or cube

numbers (c) $\sqrt{30} = \sqrt{25} = 5$

Past paper Question:

Estimate $\sqrt{\frac{72}{\pi}}$

$$= \sqrt{\frac{72}{3}}$$

$$= \sqrt{24}$$

$$= \sqrt{25}$$

$$= 5$$

By writing each number correct to 1 significant figure, estimate the value of

$$\frac{8.62 \times 2.04^2}{0.285}$$

Answer[2]

By writing each number correct to 1 significant figure, estimate the value of

$$\frac{48.9 \times 0.207^2}{3.94}$$

Answer [2]

- (a) Estimate, correct to the nearest whole number, the value of $\sqrt{\frac{72.187}{\pi}}$.

Show clearly the approximate values you use.

1-10 Tables
1-20 SQUARES
1-10 CUBES

$$\begin{aligned} \sqrt{\frac{72}{3}} &= \sqrt{24} \\ &= \sqrt{25} \\ &= 5 \end{aligned}$$

Answer [1]

- (b) Estimate the value of $\sqrt{200}$, giving your answer correct to two significant figures.

$$\begin{aligned} &\text{196} \quad 225 \\ &\sqrt{196} \\ &14 \end{aligned}$$

Answer 14 [1]